DISCUSSION OF THE CLAIMS

Support for amended Claim 1 is found at specification page 36, line 1 to continuing page 37 line 9.

No new matter has been added.

REMARKS/ARGUMENTS

Applicants thank Examiner Li for the interview conducted on January 21, 2011 and the discussions provided during the interview.

The rejection of Claims 1, 5-6, 12-16 and 18-22 under 35 U.S.C. 103(a) as being unpatentable over Ono (US 4,483,940) in view of Buscaglia et al (Journal of Materials Science 1996, 31: 5009-5016) and Fukuda et al (JP 2002-145659) is traversed.

Ono discloses a method of manufacturing a honeycomb carrier. However as the Office recognizes, One fails to teach a honeycomb carrier having $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ (wherein $0< x \leq 0.5$) and an alkalifeldspar of $(Na_xK_{1-x})AlSi_3O_8$ (see Office Action, page 3). Buscaglia discloses decomposition of $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ with x = 0.0, 0.1, 0.2, 0.4, 0.5 and 0.6 in the temperature range of 900 to 1175 °C. However, Buscaglia does not disclose a honeycomb carrier having $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ (wherein $0< x \leq 0.5$) and an alkalifeldspar represented by the empirical formula $(Na_yK_{1-y})AlSi_3O_8$ (wherein $0<y<1$) as in amended Claim 1. Fukuda discloses an aluminum titanate having an alkalifeldspar $(Na_xK_{1-x})AlSi_3O_8$. However, Fukuda does not disclose a honeycomb carrier having $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ (wherein $0< x \leq 0.5$).

As to the relationship between the Mg content and the temperature in the $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$, Buscaglia discloses the fraction of the decomposed $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ as a function of Mg content and temperature as follows (see Buscaglia, page 5013, left Col. Table 1 and lines 1-11, emphasis added):

TABLE I Decomposed fraction of $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ after 250 h treatment at different temperatures

T (°C)	x					
	0	0.1	0.2	0.4	0.5	0.6
1175	1	0	0	0	0	0
1150	1	0.03	0	0	0.31	0
1125	1	0.96	0.01	0.08	1	0
1100	1	1	0.08	0.31	1	0
1000	1	1	0.72	1		0
900	0.84	0.1	0	0		0

(16%) of titanate is still present. Decomposition of the solid solution with $x = 0.6$ was not observed in the range 900–1175 °C. For $0.1 \leqslant x \leqslant 0.5$, the decomposition degree strongly depends on the annealing temperature. Solid solutions with $x = 0.2$ and 0.4 are stable at lower temperatures than those with $x = 0.1$ and $x = 0.5$; however, decomposition always occurs for $x \leqslant 0.5$ when the temperature goes below 1125 °C. At 900 °C, the decomposition is reduced or even inhibited ($x = 0.2$ and 0.4), probably because of kinetic effects.

As disclosed above, when x = 0, the $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ completely decomposes at a temperature between 1000 and 1175 °C as evidenced by the fraction of decomposition of 1 (100%) in Table 1 of Buscaglia above. At 1100 °C, the fraction of decomposition ranges from 100% to 8% at x of 0 to 0.5 whereas no decomposition occurs when x = 0.6. In fact, Buscaglia concludes as follows (see Buscaglia, page 5014, right Col., lines 41-46, emphasis added):

> From the point of view of practical applications only the solid solution with $x = 0.6$ is stable at all temperatures between 900 and 1280 °C. However, the thermal stability should be tested for times longer than 250 h to assess the effective reliability of such a material in potential applications. Among the

As disclosed above, Buscaglia teaches that only the solid solution with x = 0.6 is stable and teaches away from x is less than 0.6. Thus, in light of the teachings of Buscaglia, one of ordinary skill in the art would not consider an $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ with x of $0 < x \leq 0.5$. Central to the Office's position is the Office's assertion that Buscaglia discloses $Al_{2(1-}$

$_{x)}Mg_xTi_{(1+x)}O_5$ with x of $0 < x \leq 0.5$. Applicants respectfully note that MPEP 2141.02 VI describes, in part, that "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." Additionally, citing *United States v. Adams*, 383 U.S. 39, 51-52 (1966), the U.S. Supreme Court confirmed in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), "[W]hen the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." Applicants respectfully submit that the Office has failed to consider Buscaglia as a whole, and that if Buscaglia is considered as a whole, as described above, in light of the teachings of Buscaglia, one of ordinary skill in the art would not consider an $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ with x of $0 < x \leq 0.5$ for any practical application. Additionally, Applicants disclose that an aluminum magnesium titanate honeycomb carrier at x of $0 < x \leq 0.5$ having alkalifelspar as in amended Claim 1 shows a surprising improvement in thermal decomposition property at 1100 °C as further shown in Fig. A of 1.132 Declaration of September 13, 2010. None of Ono, Buscaglia and Fukuda recognize such a surprising improvement in thermal decomposition property as in amended Claim 1. Thus, in light of the combined teachings of 1) Ono failing to disclose $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ (wherein $0< x \leq 0.5$) and an alkalifeldspar $(Na_xK_{1-x})AlSi_3O_8$, 2) Bucaglia teaching away from having x less than 0.6 in $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ and 3) Fukuda failing to disclose an $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ with x of $0 < x \leq 0.5$, one of ordinary skill in the art would not have foreseen a honeycomb carrier as in amended Claim 1 and the dependent claims therefrom.

Withdrawal of the rejection is respectfully requested.

The rejection of Claims 4 and 17 under 35 U.S.C. 103(a) as being unpatentable over Ono (US 4,483,940) in view of Buscaglia et al (Journal of Materials Science 1996, 31: 5009-5016) and Fukuda et al (JP 2002-145659) as applied to 1, 5-6, 12-16, and further in view of Noda (US 2001/0056034) is traversed.

The secondary reference to Noda does not disclose cure the deficiencies of Ono, Buscaglia, and Fukuda. Noda discloses a catalyst for purification of exhaust gas. However, Noda does not disclose $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ with x of $0 < x \leq 0.5$ as in amended Claim 1. Thus, in light of the combined teachings of 1) Ono failing to disclose $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ (wherein $0 < x \leq 0.5$) and an alkalifeldspar $(Na_xK_{1-x})AlSi_3O_8$, 2) Bucaglia teaching away from having x less than 0.6 in $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$, and 3) Fukuda and Noda failing to disclose an $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ with x of $0 < x \leq 0.5$, one of ordinary skill in the art would not have foreseen a honeycomb carrier as in amended Claim 1 and the dependent claims therefrom.

Withdrawal of the rejection is respectfully requested.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 08/09)

Richard L Treanor
Attorney of Record
Registration No.36,793

Soonwuk Cheong, Ph.D
Registration No. 62,793